5.0 AIR QUALITY

5.1 INTRODUCTION

This chapter describes existing air quality within the project area, discusses the regulatory framework governing air quality in the region, and evaluates the potential incremental air quality impacts associated with project construction and operation. Although project construction will result in temporary impacts to air quality in the project region, the project will comply with all federal, state, and local air quality regulations and all potential air quality impacts associated with project construction and operation will be less than significant.

5.1.1 Methodology

Analysis of project-related air quality impacts was conducted by compiling regional air quality data, developing air pollutant emissions estimates for project construction and operation, and assessing the potential for air quality impacts associated with project construction and operation. Regional air quality data supplied by the California Air Resources Board and data supplied by the U.S. Environmental Protection Agency were used in developing construction-emission estimates.

Emissions estimates used for both the construction and operation phases are conservative and provide an analysis of air quality impacts under the worst-case scenario. The following "worst case" assumptions were used during analysis:

- Fleet vehicle age is 10 years.
- Maximum disturbed soil area per day of 2 acres.
- All vehicles and equipment would be operated daily and simultaneously.

In addition, sulfur dioxide (SO_2) emissions estimates are especially conservative, as emissions factors used from EPA reference documents do not reflect the use of reformulated-diesel fuel. Furthermore, fugitive dust resulting from the operation of construction equipment, including helicopters, is highly variable and depends on the type of surface at the staging area (tarmac or dirt), the type of roads traveled, the amount of moisture in soils in and around travel and work areas, and the height of helicopter operations (i.e., the higher the operations, the less soil disturbance and fugitive dust emissions). Estimated PM_{10} emissions associated with project construction and operation are therefore broad and conservative to account for the uncertainty in fugitive dust emissions.

Though impacts are discussed under the worst-case scenario, it is unlikely that this scenario will occur; actual impacts on air quality associated with project construction and operation will therefore be less than those determined during this analysis.

5.1.2 Applicable Laws and Regulations

Federal, state, and local jurisdictions, including the U.S. Environmental Protection Agency (EPA), California Air Resources Board (CARB), the Bay Area Air Quality Management District (BAAQMD) and Sonoma County regulate air quality throughout the project region. Each of these jurisdictions develops rules, regulations, policies, and/or goals to maintain air quality and to attain the goals and directives imposed upon them through legislation. Although EPA regulations may not be superseded, state and local regulations may be more stringent. Federal, state, and local air quality regulations are detailed below.

Pollutants subject to federal ambient standards are referred to as "criteria" pollutants, as the EPA publishes criteria documents to justify the choice of standards. Both federal and state jurisdictions impose criteria pollutant standards as the primary means of controlling ambient air quality. Federal and state standards for criteria pollutants and other state-regulated pollutants are shown in Table 5-1. In addition to ambient air quality standards, additional consideration is taken to protect those members of the population who are most sensitive to the adverse health effects of air pollution. These "sensitive receptors," or specific population groups, as well as land uses where they would reside for long periods, include children, the elderly, the acutely ill, and the chronically ill. Commonly identified sensitive land uses include residences, schools, playgrounds, childcare centers, retirement homes, convalescent homes, hospitals, and clinics. A small church school is located about ¼ mile southeast of the Sonoma Substation (see Figure 11-1). Residential neighborhoods exist along Leveroni and Felder roads, and a few rural homes are scattered along the project corridor [see Figures 2-4(a) through 2-4(d)].

5.1.2.1 Federal Air Quality Regulations

The Federal Clean Air Act of 1970 (CAA) authorized the establishment of national health-based air quality standards for six criteria pollutants known to adversely affect human health—carbon monoxide (CO), ozone (O_3), particulate matter (PM10), nitrogen dioxide (NO2), sulfur dioxide (SO2), and lead (Pb)—and set deadlines for their attainment throughout the country. The act required states exceeding the federal standards to prepare and implement air quality plans in order to achieve attainment for all six criteria pollutants by 1987.

The CAA was amended in 1977 and 1990 to include standards for toxic air contaminants, to require facilities emitting pollutants to sharply reduce their emissions, and amended the actions required of areas exceeding air quality standards and the deadlines set for attaining federal standards. The Clean Air Act Amendments of 1977 and 1990 require that states prepare and adopt a State Implementation Plan for each criteria pollutant that violates national standards and that designated agencies in any area that does not meet national standards prepare and adopt an air quality management plan demonstrating the steps to be implemented to bring the area into compliance. In addition, the amendments of 1990 provide a new timeframe and a new set of guidelines for implementing the air quality regulations.

Table 5-I
Federal and State Air Quality Standards and Bay Area Attainment Status

Pollutant	Averaging Time	California Standards		Federal Standards	
		Concentration	Attainment Status	Concentration	Attainment Status
Ozone	8-Hour 1-Hour	--- 0.09 ppm	--- N	0.08 ppm 0.12 ppm	U N
Carbon Monoxide	8-Hour 1-Hour	9.0 ppm 20.0 ppm	A A	9.0 ppm 35.0 ppm	A A
Nitrogen Dioxide	Annual 1-Hour	--- 0.25 ppm	--- A	0.053 ppm ---	A ---
Sulfur Dioxide	Annual 24-Hour 1-Hour	--- 0.05 ppm 0.25 ppm	--- A A	0.03 ppm 0.14 ppm ---	A A ---
PM_{10}	Annual Geometric Mean 24-Hour	20.0 ug/m^3 50.0 ug/m^3	N N	50 ug/m^3 150 ug/m^3	A[†] U
$PM_{2.5}$	Annual Arithmetic Mean 24-Hour	12.0 ug/m^3 ---	N ---	15.0 ug/m^3 65.0 ug/m^3	U U

N = Non-attainment; A = Attainment; U = Unclassified

[†] *Annual arithmetic mean*

Source: BAAQMD 2003

To protect human health and the environment, the EPA has set "primary" and "secondary" maximum ambient thresholds for all six criteria pollutants. Primary thresholds were set to protect human health, particularly sensitive receptors such as children, the elderly, and individuals suffering from chronic lung conditions such as asthma and emphysema. Secondary standards were set to protect the natural environment and prevent further deterioration of animals, crops, vegetation, and buildings.

The combined primary and secondary standards are termed the National Ambient Air Quality Standards (NAAQS) and are shown in Table 5-1, along with state ambient air quality standards and project area attainment status. Note that standards for lead are no longer included in NAAQS, as lead concentrations have been adequately decreased nationwide with the removal of lead from fuels, and that particulate matter is divided into particles less than 10 microns in diameter (PM_{10}) and particles less than 2.5 microns in diameter ($PM_{2.5}$). The project area is currently unclassified or in attainment of all federal criteria NAAQS except for ozone, which exceeds the national 1-hour standard (BAAQMD 2003).

5.1.2.2 State Air Quality Regulations

The California Air Resources Board (CARB) has set ambient air quality standards to protect public health and welfare that are stricter than the NAAQS set by the EPA under the federal CAA. Under the California Clean Air Act of 1988 (CCAA), the CARB designated all air basins within the state as attainment, nonattainment, or unclassified for all criteria pollutants, and required regional air quality management and control districts to develop and implement strategies to attain state ambient air quality standards. California's standards and the project area's attainment status also are shown in Table 5-1. The project area is currently classified as nonattainment for ozone and particulate matter, but is in attainment of all other standards.

5.1.2.3 Regional and Local Air Quality Regulations

The project area lies within the Bay Area Air Quality Management District (BAAQMD), and air quality emissions within the project area fall under its jurisdiction. The BAAQMD regulates air pollutant emissions throughout the Bay Area Air Basin, including carbon monoxide, hydrogen sulfide, nitrogen oxides (including nitrogen dioxide), organic compounds, ozone, particulate matter, and sulfur oxides (including sulfur dioxide) (BAAQMD 1999). The BAAQMD develops and enforces regulations and permits governing these pollutants, and develops and implements air quality plans to reach attainment of all standards.

The 2000 Bay Area Clean Air Plan, adopted by the BAAQMD in December of 2000, is a regional plan that addresses how the Bay Area, including the project area, will attain federal and state air quality standards. The plan states that major sources of emissions should install emission-control devices and that new sources must apply for air quality permits. In addition to the Clean Air Plan, the 2001 Ozone Attainment Plan identifies control measures the region should implement in order to improve air quality in the San Francisco Bay Area Air Basin. Finally, as discussed below in Section 5.3, the BAAQMD has also adopted CEQA guidelines, which set forth the conditions under which the significance of air quality impacts associated with major Bay Area construction projects is to be assessed. Project construction and operation will be consistent with the Bay Area Air Quality Plan and all other applicable BAAQMD regulations, guidelines, and permitting requirements, as required under state law.

The Sonoma County General Plan's Resource Conservation Element includes goals and policies regarding the protection and enhancement of air quality in the project region. The County's goal in maintaining air quality is to "Preserve and maintain good air quality and provide for an air quality standard that will protect human health and preclude crop, plant and property damage in accordance with the requirement of the federal and state clean air acts." The County does not have any air quality protection policies that are applicable to the project.

County air quality goals and policies do not limit the construction or operation of the project, and the project will comply with all local policies and regulations.

5.2 EXISTING CONDITIONS

Air quality in a given region is determined by its topography, meteorology, climate, and air pollutant sources. This section discusses the factors contributing to air quality in the project region.

5.2.1 Regional Topography, Meteorology, and Climate

The project is located in the northern portion of the San Francisco Bay Area, where topography, meteorology, and climate significantly affect air quality conditions. The region's varied topography; including rolling hills, coastal mountains, and broad valleys, significantly influences airflow and precipitation throughout the region producing the Bay Area's unique microclimates. Regional airflow patterns, influenced by topography, affect air quality by directing pollutants downwind of sources, while localized meteorological conditions, such as moderate winds and precipitation, disperse pollutants and reduce pollutant concentrations. Conversely, there are times when a warm layer of air overlays cooler air close to the ground forming a temperature inversion layer that reduces vertical dispersion and increases pollutant concentrations in the region. Factors such as temperature and precipitation also influence air quality, as many air pollutants are reactive or soluble under certain conditions.

Several factors combine to give the San Francisco Bay region a unique and varied climate. California's location in the middle latitudes, uneven topography in the Bay region, maritime surroundings and the semi-permanent eastern Pacific high-pressure system combine to produce a Mediterranean climate, typically characterized by moist mild winters and dry summers. Average summer temperatures in the project area range from 65°F to 70°F, with average daily maximum temperatures during June through August ranging 80 to 90°F (Golden Gate Weather Service 2003; Western Regional Climate Center, 2004). Winters are also moderate, with average highs ranging from 55°F to 60°F and average daily lows in the 35°F to 40°F range.

Precipitation in the area averages 25 - 30 inches per year, with over 50 percent occurring during winter months and less than 5 percent occurring during summer months. The rainy season is typically November through March, the dry season May through September, with April and October transition months between wet and dry seasons. Off-season rains are usually the result of weak early- or late-season weather fronts or surges of subtropical moisture from the south. Some moisture in the project region is also produced through drizzle, though rarely enough to measure in one day. The most notable attribute of rain in the region is its annual and spatial variability; rainfall in a given location can vary up to 20 percent in any given year and from an area just a few miles away.

The region also experiences fog typical of the Bay Area, though fog in the project area is usually not as thick as that nearer the coast. Summer fog in the region is produced by cold Pacific Ocean waters along the coast, while radiation fog produced by cold air over damp ground during winter can form locally or be blown in on easterly winds from the Sacramento River Delta and Central Valley.

5.2.2 Regional Air Quality

The project area lies within the San Francisco Bay Area Air Basin (Basin), which extends from central Napa County in the north to Santa Clara County in the south. Three air-quality designations can be given to an area for a particular pollutant:

- **Nonattainment:** Air quality standards have not consistently been achieved.
- **Attainment:** Air quality standards have consistently been achieved.
- **Unclassified:** There is not enough monitoring data to determine the area's attainment status.

As shown in Table 5-1, the project area is in nonattainment of federal 1-hour ozone standard, the California 1-hour ozone standard, and the California annual geometric mean and 24-hour PM_{10} standards. The project area is unclassified for federal annual arithmetic mean and 24-hour $PM_{2.5}$ standards, the federal 24-hour PM_{10} standard, and the federal 8-hour ozone standard. The area is in attainment of all other federal and state ambient air quality standards.

5.2.2.1 Ozone

Ozone is a photochemical oxidant and the primary component of smog. Though not emitted directly into the atmosphere, ozone is a secondary air pollutant formed through complex chemical reactions involving the precursor emissions of volatile organic compounds (VOC) and nitrogen oxides (NO_X), both of which are emitted by stationary and mobile sources such as motor vehicles and industrial sources. Ozone is a regional air pollutant that is formed downwind of VOC and NO_X sources. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours.

The adverse health effects associated with ozone exposure primarily pertain to the respiratory system. Scientific evidence indicates that ambient levels of ozone not only affect sensitive receptors but affect healthy adults as well. Short-term exposure to ozone can cause constriction of the airways, increased respiratory rates, and pulmonary resistance, and may also irritate the eyes. In addition to causing shortness of breath, ozone can aggravate respiratory diseases such as asthma, bronchitis, and emphysema. High ozone concentrations are also a potential problem to sensitive crops, such as wine grapes (BAAQMD 1999).

Ozone levels within the Basin have remained relatively stable over the last decade. Following five years of attainment from 1990 through 1994, 1995 marked the beginning of renewed exceedances of the federal and state ozone standards in the Bay Area. Since 1996, the area has fluctuated in and out of attainment, with nonattainment periods generally occurring during annual summer increases in emissions. Urban vehicular emissions, industrial complex emissions, and high ambient temperatures in the Basin contribute to summertime ozone generation and subsequent air standard violations.

Table 5-2 shows ozone monitoring data measured in the closest air monitoring station (BAAQMD Napa Station) in the vicinity of the project since 1993. As shown, the state 1-hour ozone concentration standard has been exceeded 15 times within the past 10 years, but only twice since 2000. Peak hourly average ozone concentrations ranged from 0.077 to 0.130 ppm in the project vicinity during this time. In addition to state standards, both the 1-hour and 8-hour federal ozone standards were exceeded in the project vicinity in 1995 and 1998, and the 8-hour standard was exceeded again in 1999.

5.2.2.2 Particulate Matter (PM_{10})

PM_{10} consists of particulate matter that is 10 microns or less in diameter, and $PM_{2.5}$ consists of particulate matter 2.5 microns or less in diameter. Both PM_{10} and $PM_{2.5}$ can cause a variety of adverse health effects when inhaled into the air passages and the lungs. Particulate matter in the atmosphere results from a variety of dust- and fume-producing industrial and agricultural operations, combustion, and atmospheric photochemical reactions. Some of these operations, such as demolition and construction activities, contribute to increases in local PM_{10} and $PM_{2.5}$ concentrations, while others, such as vehicular traffic, affect regional concentrations.

Major sources of primary PM_{10} emissions in Sonoma County include paved and unpaved road dust (37 percent), industrial mineral processes (20 percent), construction and demolition activities (16 percent), residential fuel combustion (12 percent), and farming operations (4 percent) (CARB 1998). Particulate concentrations near residential sources generally are higher during the winter, when more fireplaces are in use and meteorological conditions prevent the dispersion of directly emitted contaminants.

The maximum PM_{10} concentration observed in the project vicinity in the past decade was 90.9 $\mu g/m^3$, observed in 2001. As shown in Table 5-2, PM_{10} has exceeded state standards up to 13 times per year, with a low of zero exceedances observed in 2000. Concentrations have not exceeded national standards since PM_{10} monitoring began at the Napa-Jefferson Avenue monitoring station in 1986 (CARB 2003a, CARB 2003b).

Table 5-2
Ozone and Particulate Matter Monitoring Data

Year	Ozone				Particulate Matter		
	Peak 1-hr. Conc. (ppm)	Peak 8-hr. Conc. (ppm)	Number of Nat'l 1-hr. Exceedances	Number of State 1-hr Exceedances	Peak 24-hr. Conc. (ug/m^3)	Number of Nat'l 24-hr. Exceedances	Number of State 24-hr. Exceedances
2002	0.116	0.082	0	1	56.2	0	6
2001	0.099	0.078	0	1	90.9	0	12
2000	0.077	0.063	0	0	44.9	0	0
1999	0.115	0.090	0	4	66.4	0	12
1998	0.125	0.099	1	3	59.5	0	6
1997	0.084	0.071	0	0	78.0	0	13
1996	0.090	0.075	0	0	56.8	0	6
1995	0.130	0.096	1	4	68.5	0	6
1994	0.092	0.075	0	0	85.9	0	12
1993	0.120	0.083	0	2	70.0	0	13

Ozone Standards: State 1-hour: 0.009 ppm; National 1-hour: 0.12 ppm.

PM_{10} Standards: State 24-hour: 50.0 ug/m^3; National 24-hour: 150.0 ug/m^3.

Source: CARB 2003a, CARB 2003b (City of Napa monitoring station, located on Jefferson Avenue, Napa, CA)

5.3 POTENTIAL IMPACTS

This section presents an analysis of the potential air quality impacts associated with project construction and operation. Emissions from construction equipment exhaust and generation of particulate matter are the primary concerns in evaluating short-term air quality impacts. Long-term impacts, however, will be negligible since emission-related activities associated with project operation and maintenance will be limited to periodic maintenance trips.

5.3.1 Significance Criteria

Standards of significance were derived from Appendices G of the CEQA Guidelines and in accordance with federal Clean Air Act General Conformity Requirements. Impacts to air quality were considered to be significant if they would:

- Conflict with or obstruct implementation of any applicable air quality plan;
- Violate any federal or state air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under applicable federal or state ambient air quality standards (including releasing emissions which exceed quantitative thresholds for ozone precursors);

- Expose sensitive receptors, including schools, hospitals, and residential areas to substantial pollutant concentrations;
- Create objectionable odors affecting a substantial number of people;
- Alter air movement, moisture, or temperature, or lead to a change in climate, either locally or regionally; or
- Result in the generation of more than 100 tons per year of NO_2, VOC, CO, or PM_{10}.

In addition to the standards of significance set forth in Appendix G of the CEQA Guidelines and the CAA General Conformity Requirements, BAAQMD has published a set of recommendations that provide specific guidance on evaluating projects relative to the above general criteria (BAAQMD 1999). In assessing construction-related impacts, BAAQMD recommends a qualitative approach that focuses on the dust control measures that will be implemented; if appropriate mitigation measures are implemented to control PM_{10} emissions, then impacts associated with project construction would be less than significant.

In assessing operation-related impacts, BAAQMD recommends that local agencies use the criteria of 80 pounds per day or 15 tons per year to identify significant increases in emissions of ROG, NO_X, or PM_{10} from individual development projects; exceedance of either criteria would be considered a significant impact. Project-related carbon monoxide impacts are evaluated through the application of dispersion modeling techniques and a direct comparison of modeled concentrations with ambient carbon monoxide standards. Lastly, BAAQMD recommends that cumulative air quality effects be discussed with reference to the consistency of a project to the regional Clean Air Plan.

The following impacts analysis follows BAAQMD guidelines and addresses each of the above significance criteria.

5.3.2 Construction Impacts

Construction-related emissions are generally short-term in duration, but may still cause adverse air quality impacts (BAAQMD 1999). Project construction would employ a variety of construction and grading equipment. PM_{10} is the primary air pollutant emitted during construction activities, but additional pollutants are emitted from motor-driven construction equipment, construction vehicles, and workers' vehicles. The "worst-case" scenario for total emissions during the project construction, which would involve conducting all construction activities and excavations and operating all project-related equipment simultaneously, would generate the following emissions:

- PM_{10} 0.10 tons per day
- Reactive Organic Gas (ROG) 0.02 tons per day

- CO 0.41 tons per day
- NO_2 0.15 tons per day
- SO_2 0.01 tons per day

Actual projected construction emissions are presented in Table 5-3, broken down by individual equipment.

Table 5-3
Construction Emissions Estimates

Activity and Equipment	Emissions (Pounds/Day)				
	ROG	CO	NO_x (as NO_2)	SO_2	PM_{10}
Transmission Line Activity					
Material Delivery and Installation					
Rigging Truck (2)	0.59	9.24	1.08	0.00	0.00
Mechanic Truck (1)	0.14	1.69	0.17	0.00	0.00
Helicopter	1.60	8.00	40.00	0.00	0.00
1-Ton Pick-up Truck (4)	1.18	18.47	2.16	0.00	0.00
Boom Truck (2)	8.96	272.00	6.74	0.37	0.90
2-Ton Pick-up Truck (2)	0.59	9.24	1.08	0.00	0.00
Cable Puller Truck (1)	1.52	28.72	10.16	2.79	1.25
Tensioner Truck (1)	1.52	28.72	10.16	2.79	1.25
Construction Dust*	0.00	0.00	0.00	0.00	102.00
Line Activity Totals (pounds/day)	16.10	376.04	71.55	5.94	104.50
Line Activity Totals (tons/day)	0.01	0.19	0.04	0.003	0.05
Substation Activities					
Structure Foundation Excavation					
3/4-Ton Pick-up Truck (2)	0.59	9.24	1.08	0.00	0.00
1-Ton Truck (1)	1.52	14.32	33.36	3.63	2.05
Truck Mounted Digger (1)	1.20	5.28	13.52	1.30	1.11
Crawler Backhoe (1)	1.52	28.72	10.16	2.74	1.25
Concrete Truck (1)	1.52	28.72	10.16	2.74	1.25
Structure Delivery and Setup					
3/4-Ton Pick-up Truck (2)	0.59	9.24	1.08	0.00	0.00
Boom Truck (1)	4.98	136.00	3.38	0.19	0.45
Mobile Crane (1)	4.98	136.00	3.38	0.19	0.45
Cleanup and Landscaping					
2-Ton Flat Bed Truck (2)	1.52	14.32	33.36	3.63	2.05
3/4-Ton Pick-up Truck (2)	1.88	18.47	2.16	0.00	0.00
1-Ton Truck (2)	3.04	28.64	66.72	7.26	4.10
D-3 Bulldozer	1.52	14.32	33.36	2.78	1.32
Grading and Backfill	0.00	0.00	0.00	0.00	76.5
Substation Construction Total (pounds/day)	25.32	444.96	211.89	24.19	90.53

Table 5-3
Construction Emissions Estimates

Activity and Equipment	Emissions (Pounds/Day)				
	ROG	CO	NO_x (as NO_2)	SO_2	PM_{10}
Substation Construction Total (tons/day)	0.01	0.22	0.11	0.01	0.05
Project Construction Total (Tons/day)	**0.02**	**0.41**	**0.15**	**0.01**	**0.10**

Source: EPA 1985a, EPA 1985b, PG&Ea

**Based on a maximum of 2 acres per day of soil disturbance*

Table 5-4 presents an emissions inventory of the Bay Area Air Basin by source category, including the net projected contribution of the project to each source category. Even when assuming "worst-case" conditions, project-related contributions would be less than 1.0 percent for all source categories

Table 5-4
2001 Bay Area Annual Average Emissions by Source Category

Source Category	Daily Emissions (Tons/Day)				
	PM_{10}	ROG	NO_x (as NO_2)	SO_2	CO
Industrial Processes	1.44	1.35	0.01	---	0.00
Organic Compound Evaporation	---	8.13	---	---	---
Combustion	0.10	0.09	1.84	0.21	1.00
Mobile Sources	1.62	32.35	48.56	2.26	235.34
Natural Sources	0.06	0.02	0.01	---	0.33
Miscellaneous	11.95	9.56	2.02	0.16	19.12
Area Totals	15.17	51.5	52.44	2.63	255.79
Project Construction Contribution	0.10	0.02	0.15	0.01	0.41
Percent Net Contribution (worst case)	0.7	0.03	0.2	0.04	0.02

Source: EPA 1985a, EPA 1985b, PG&Ea.

Furthermore, as noted in the *BAAQMD CEQA Guidelines*, the determination of significance with respect to construction-related emissions should be based on a consideration of the emissions control measures to be implemented (BAAQMD 1999). Though construction-related emissions will be less than significant without implementation of emissions control measures, project construction will include the following control measures to further reduce any potential air quality impacts:

- Water all active construction areas and staging areas at least twice daily in dry season;
- Cover all trucks hauling soil, sand, or other loose material, or require all trucks to maintain at least 2 feet of freeboard;

- Install rock, apply water at least twice daily in dry season, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites;
- Apply water to helicopter landing areas as needed;
- Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites;
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets;
- Apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more), as needed;
- Enclose, cover, water twice daily, or apply (non-toxic) soil binders to exposed stockpiles of soil and other excavated materials;
- Replant vegetation in disturbed areas following the completion of construction.
- Vehicle speeds will be limited to 15 mph on unpaved roads;
- Vehicle idling time will be minimized;
- Construction vehicles will use paved roads to access the construction site when possible; and
- Construction workers will carpool when possible.

Project construction control measures include all basic and enhanced control measures as listed in the *BAAQMD CEQA Guidelines*. The guidelines state that, "If all of the control measures indicated…(as appropriate, depending on the size of the project area) will be implemented, then air pollutant emissions from construction activities would be considered a less than significant impact" (BAAQMD 1999). Accordingly, all air quality impacts associated with project construction will be less than significant.

5.3.3 Operational Impacts

Corona activity on electrical conductors surrounded by air can produce very tiny amounts of gaseous effluents: ozone and NO_x. Ozone is a naturally occurring part of the air, with typical rural ambient levels around 10 to 30 parts per billion (ppb) at night and peaks of 100 ppb and higher. In urban areas, concentrations greater than 100 ppb are common. The National Ambient Air Quality Standard for Oxidants is 120 parts-per-billion (ppb), not to be exceeded as a peak one-hour concentration on more than one day a year (the standard for NO_2 is 140 ppb). Ozone is the primary photochemical oxidant, representing 90-95% of the total. In general, the most sensitive ozone measurement instrumentation can measure about 1 ppb.

Gaseous effluents can be produced by corona activity on high voltage transmission line electrical conductors during rain or fog conditions, and can occur for any configuration or location. Typically, concentrations of ozone at ground level for 230 kV and lower voltage transmission lines during heavy rain are significantly less than the most sensitive instruments can measure, and thousands of times less than ambient levels (and nitrogen oxides are even smaller). Thus, this would not be significant.

The only other air emissions created by the project, once operational, are those associated with maintenance and repair of project components. Project maintenance and repair will not involve grading, excavation, or the use of any motor-driven equipment, but will require the use of vehicles to transport maintenance workers to and from the site. As shown in Table 5-5, using an estimated 100 vehicle miles per month (80 miles light-duty trucks and 20 miles heavy-duty trucks) for maintenance and repairs, total operations-related emissions during will be considerably less than the BAAQMD thresholds of significance for ROG, NO_X, and PM_{10} of 80 pounds per day. Potential operational impacts to air quality are less than significant, and no mitigation measures are required.

Table 5-5
Operational Emissions Estimates

Activity and Equipment	Emissions (Pounds/Day)				
	ROG	CO	NO_2	SO_2	PM_{10}
Light Duty Truck (80 miles/month)	0.08	1.64	0.42	0.00	0.00
Heavy Duty Truck (20 miles/month)	0.04	0.62	0.08	0.28	0.16
Substation and Power Line Operations Total (pounds/day)	0.12	2.26	0.50	0.28	0.16
Substation and Power Line Operations Total (tons/day)	0.00006	0.00114	0.00026	0.00014	0.00008

Source: EPA 1985a, EPA 1985b.

5.4 MITIGATION MEASURES

As all potential air quality impacts associated with project construction and operation will be less than significant, no mitigation measures are required.

5.5 REFERENCES

Bay Area Air Quality Management District (BAAQMD). 1999. BAAQMD Guidelines, Assessing the Air Quality Impact of Projects and Plans.

Bay Area Air Quality Management District (BAAQMD). 2003. Ambient Air Quality Standards and Bay Area Attainment Status. Accessed online at: http://www.baaqmd.gov/planning/resmod/baas.html

California Environmental Protection Agency, Air Resources Board (CARB). 2000. Website: www.arb.ca.gov/app/emisinv/emssumcat_query.php, Emissions by Category, 200 Estimated Annual Average Emission, Contra Costa County 2001.

California Environmental Protection Agency, Air Resources Board (CARB). 2002. The 2001 California Almanac of Emission and Air Quality.

California Environmental Protection Agency, Air Resources Board (CARB). 2003a. Air Quality Trend Summaries. Accessed online at: http://www.arb.ca.gov/adam/cgi-bin/db2www/polltrends.d2w/start.

California Environmental Protection Agency, Air Resources Board. (CARB). 2003b. Top Four Measurements and Days Above the Standard. Accessed online at: http://www.arb.ca.gov/adam/cgi-bin/db2www/adamtop4.d2w/start.

Western Regional Climate Center, http://www.wrcc.dri.edu, NCDC 1971-2000 Monthly Normals; Petaluma FS; Sonoma; 2004.

Golden Gate Weather Service 2003; Western Regional Climate Center, 2004

Electric Power Research Institute. 1982. Transmission Line Reference Book: 345 kV and Above, Second Edition.

Pacific Gas and Electric Company (PG&E). 2004a. Lakeville-Sonoma 115kV Transmission Line Project Construction Plan.

Pacific Gas and Electric Company (PG&E). 2003b. Personal Communication with Mike Neer, Project Manager. September 2002 through July 2003.

U. S. Environmental Protection Agency (EPA). 1985a. AP-42, Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources.

U. S. Environmental Protection Agency (EPA). 1985b. AP-42, Compilation of Air Pollutant Emission Factors, Volume II: Mobile Sources.

U.S. Environmental Protection Agency (EPA). 1996. Use of Locality-Specific Transportation Data for the Development of Mobil Source Emission Inventories.

U. S. Environmental Protection Agency (EPA). 1998. AP-42, Compilation of Air Pollutant Emission Factors, Volume II: Mobile Sources, Appendix H.

Wilson, Ihrig, & Associates, Inc (WIA). 1986. Data recorded from a Calstar Messerschmitt BK 117 helicopter in Castro Valley, California.

This page intentionally left blank.